TOLEDO 7685050

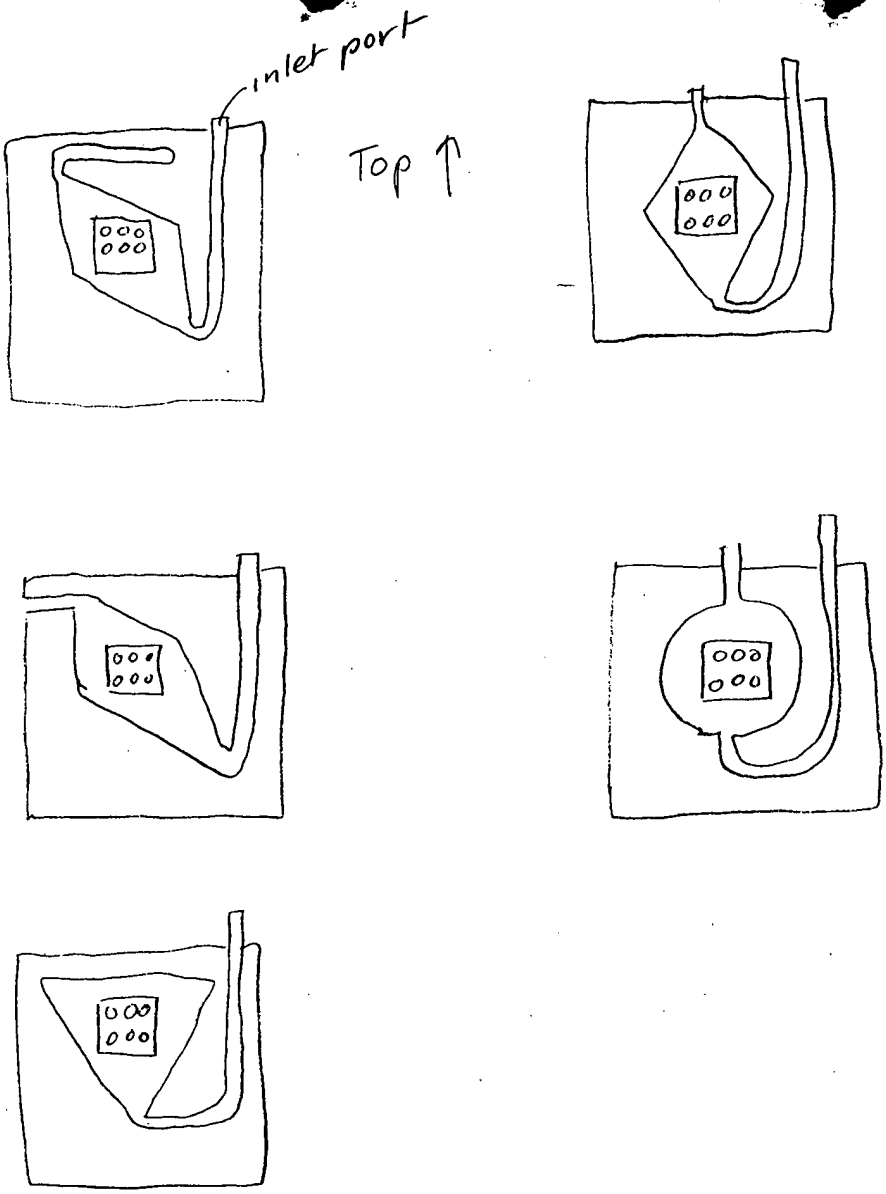
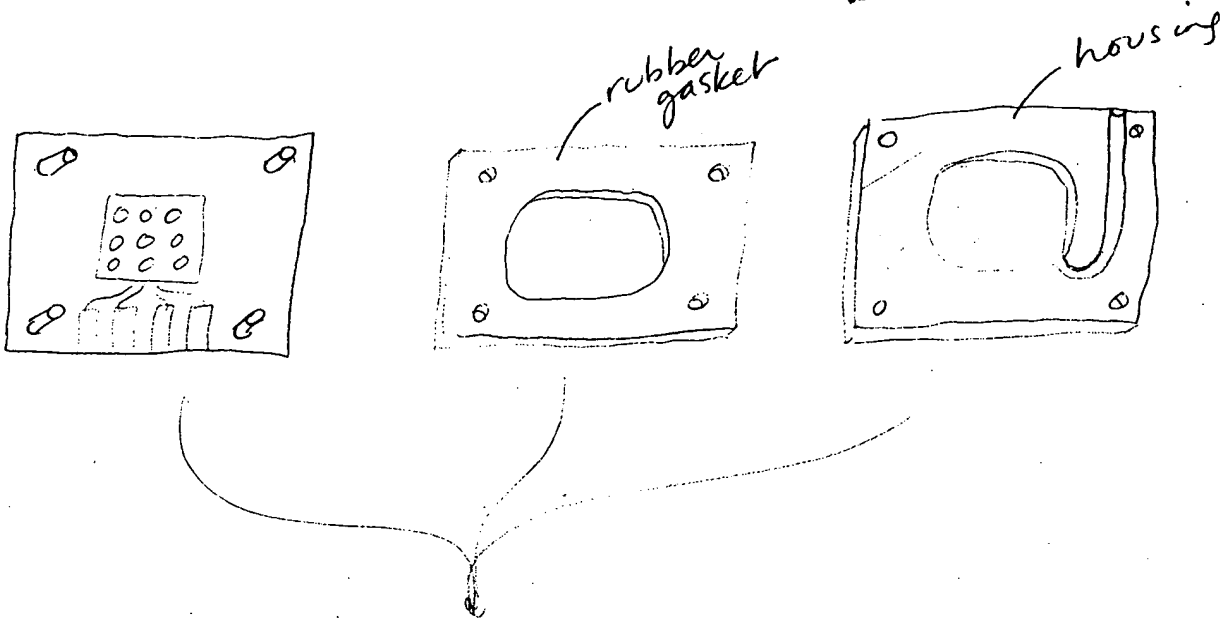
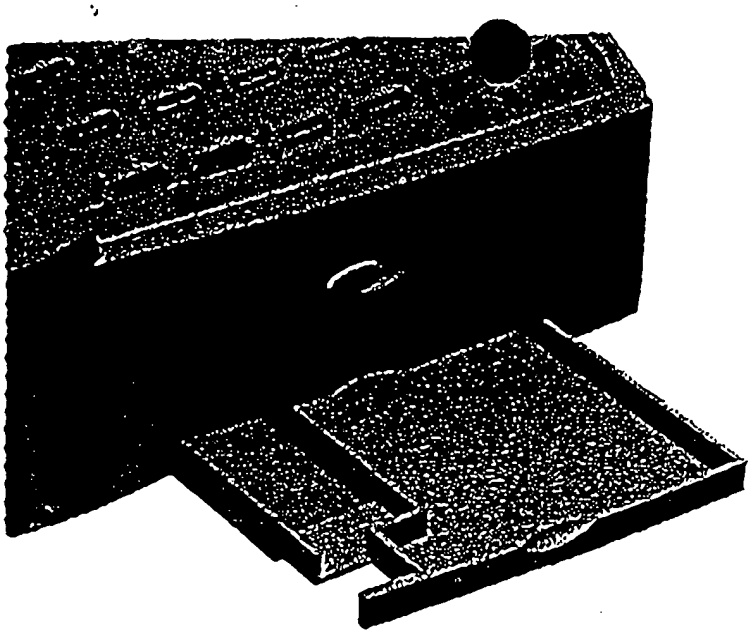


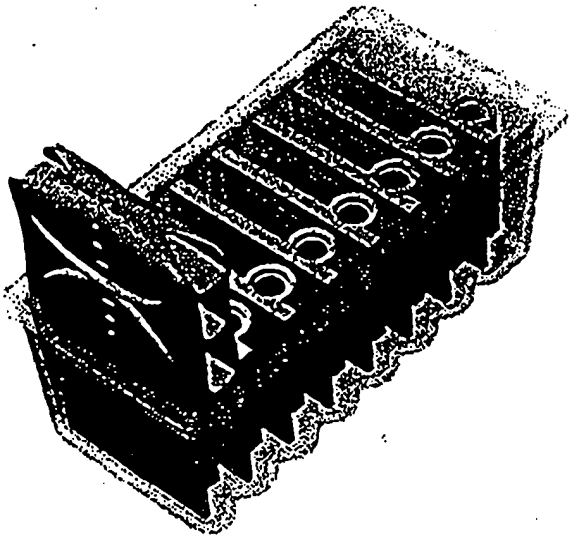
FIGURE 1

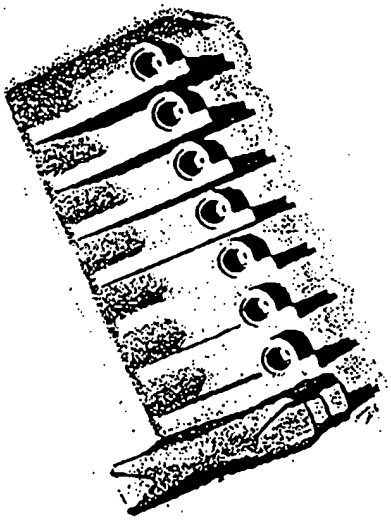


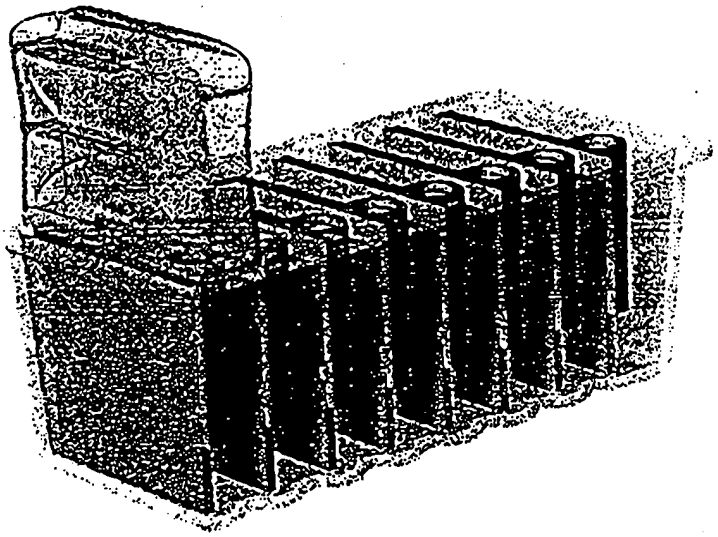
EDITED: 15605760

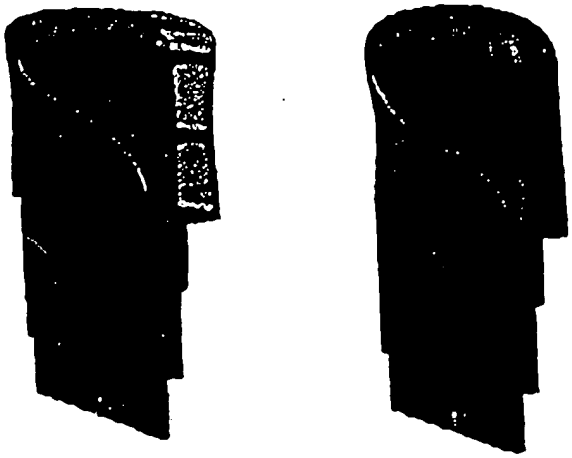
FIGURE 2











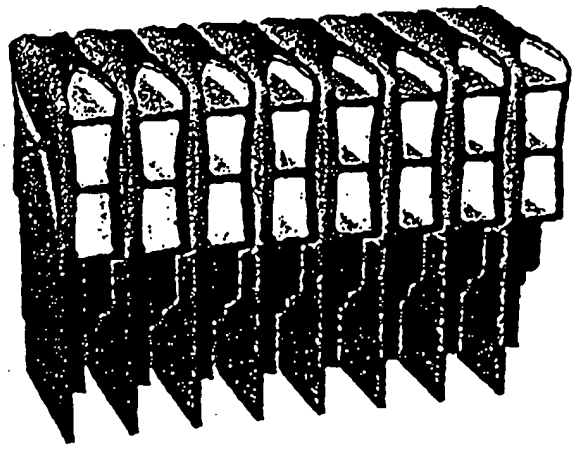


FIGURE 3

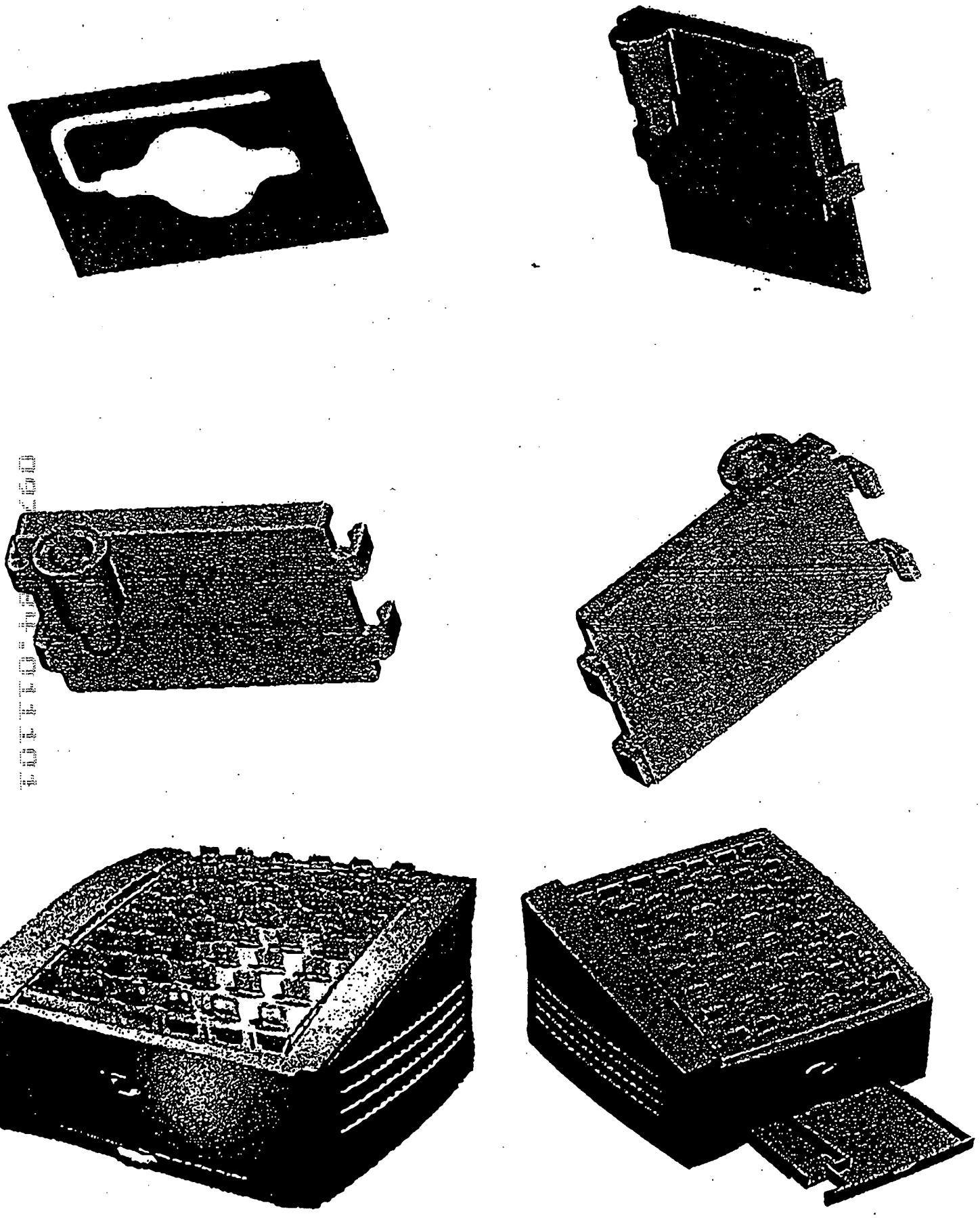


FIGURE 4

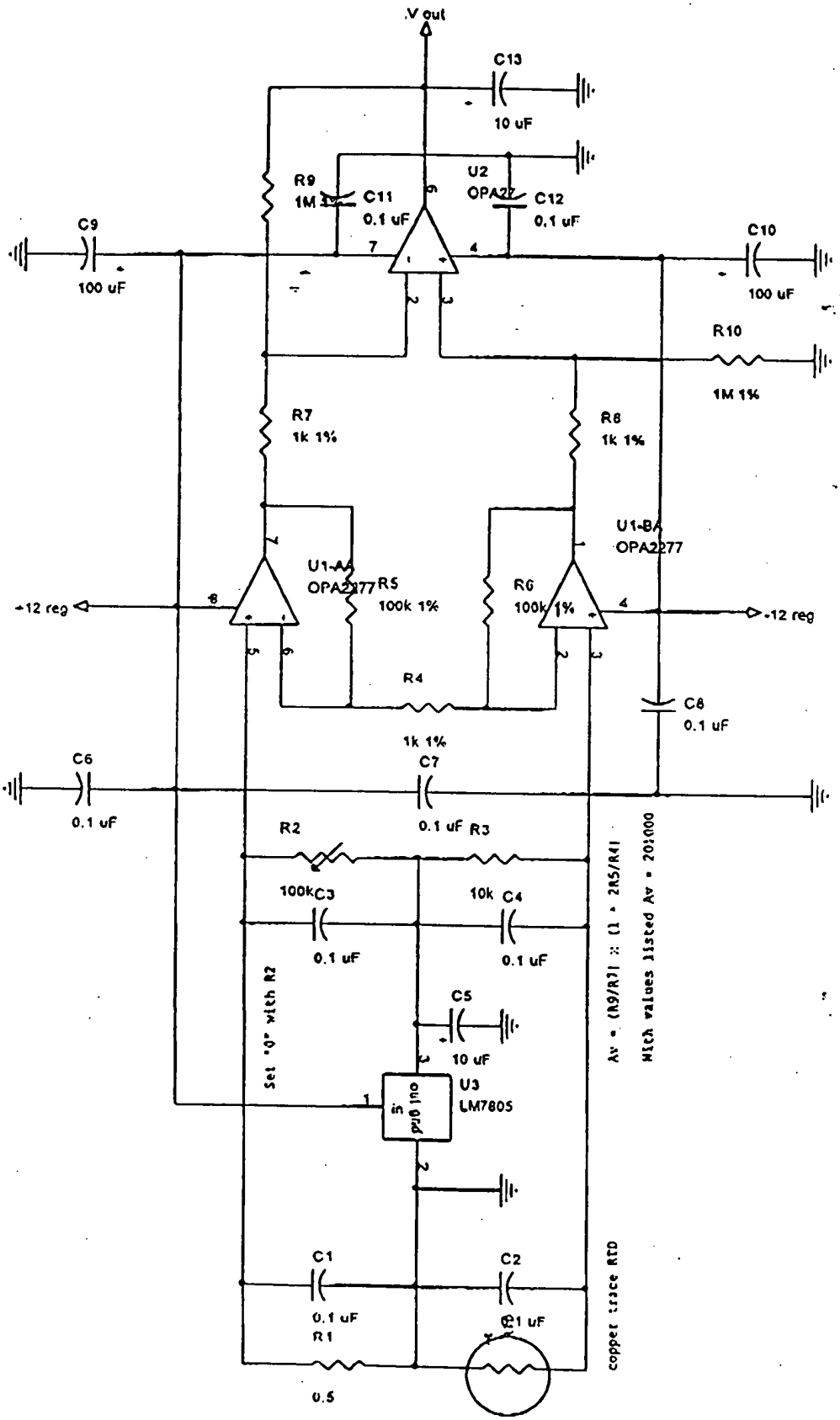
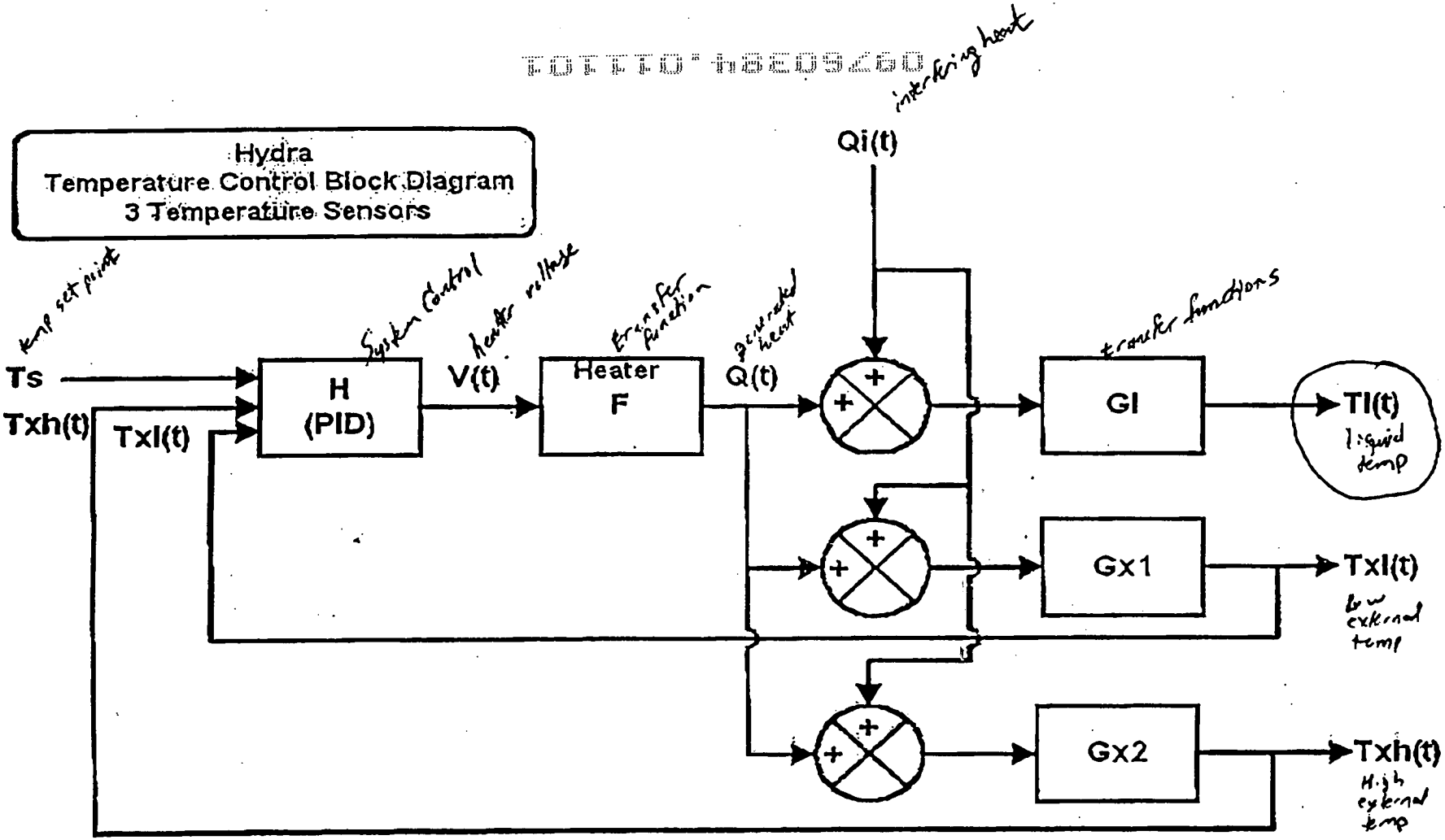

V out
C13
10 uF
R9
1M
C11
0.1 uF
U2
OPA2277
C12
0.1 uF
C9
100 uF
C10
100 uF
R10
1M 1%
R7
1k 1%
R8
1k 1%
U1-BA
OPA2277
U1-AA
OPA2277
R5
100k 1%
R6
100k 1%
+12 reg
-12 reg
R4
1k 1%
C8
0.1 uF
C6
0.1 uF
C7
0.1 uF
R2
R3
100k
C3
10k
C4
0.1 uF
0.1 uF
C5
10 uF
U3
LM7805
in
gnd
out
Set "0" with R2
Av = (R9/R1) = (1 + 2R5/R4)
With values listed Av = 201000
C1
C2
0.1 uF
1 uF
R1
0.5
copper trace RED

FIGURE 5

EDITED hBED9260



Ts = Temperature set point
Txl = Xternal temperature1, low (measured)
Tx2 = Xternal temperature 2, high (measured)
TI = Liquid temperature (desired)
V(t) = Heater voltage (driven)
Q(t) = Generated heat (driven)
Qi(t) = Interfering heat (unknown)

F, GI, Gx1, Gx2 = transfer functions (unknown)
H = system control function (tbd)

FIGURE 6

EDITED: 08209260

Board Assembly

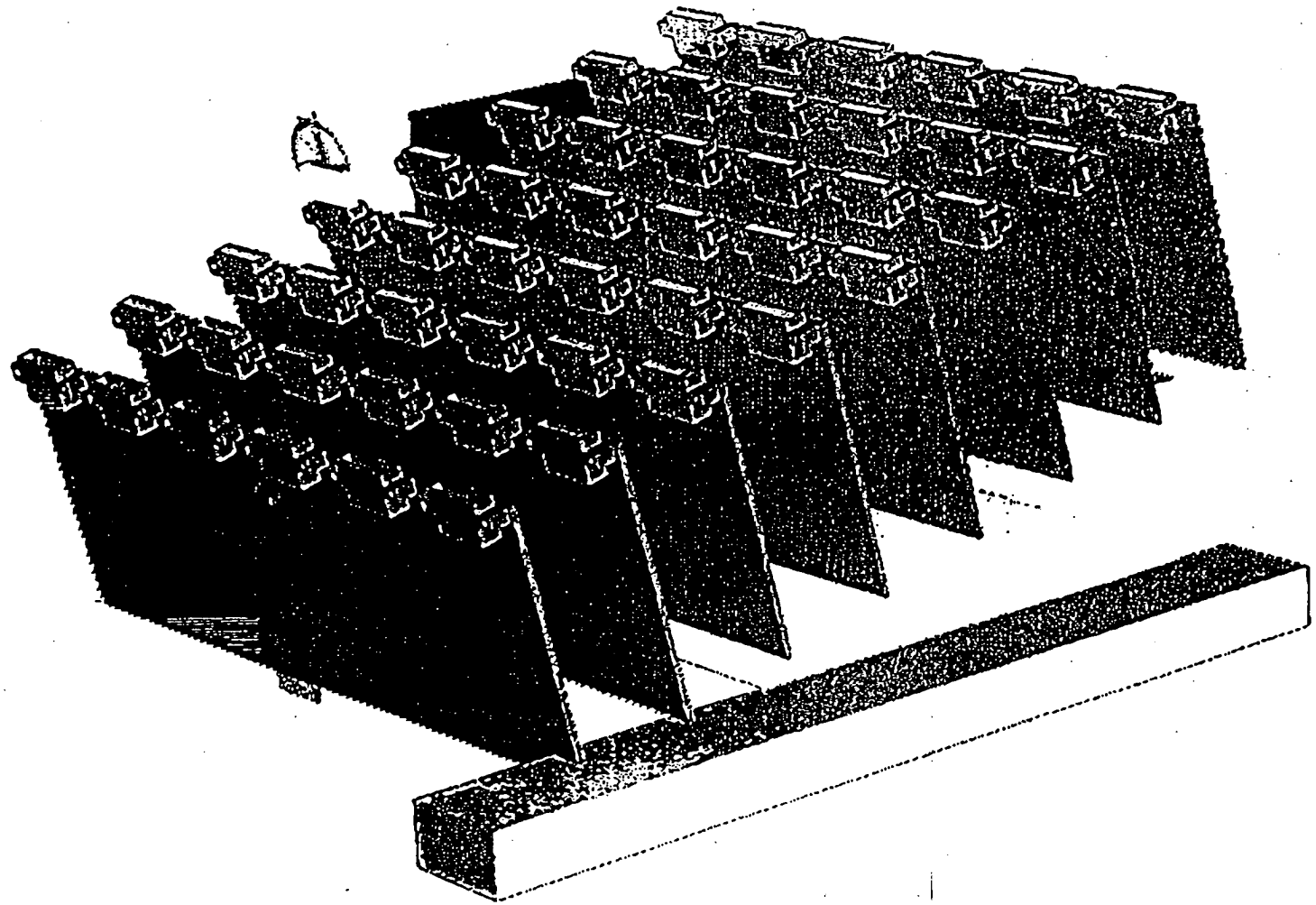


FIGURE 1

TOTTEN "A8E09260

SOFTWARE FOR HYDRA

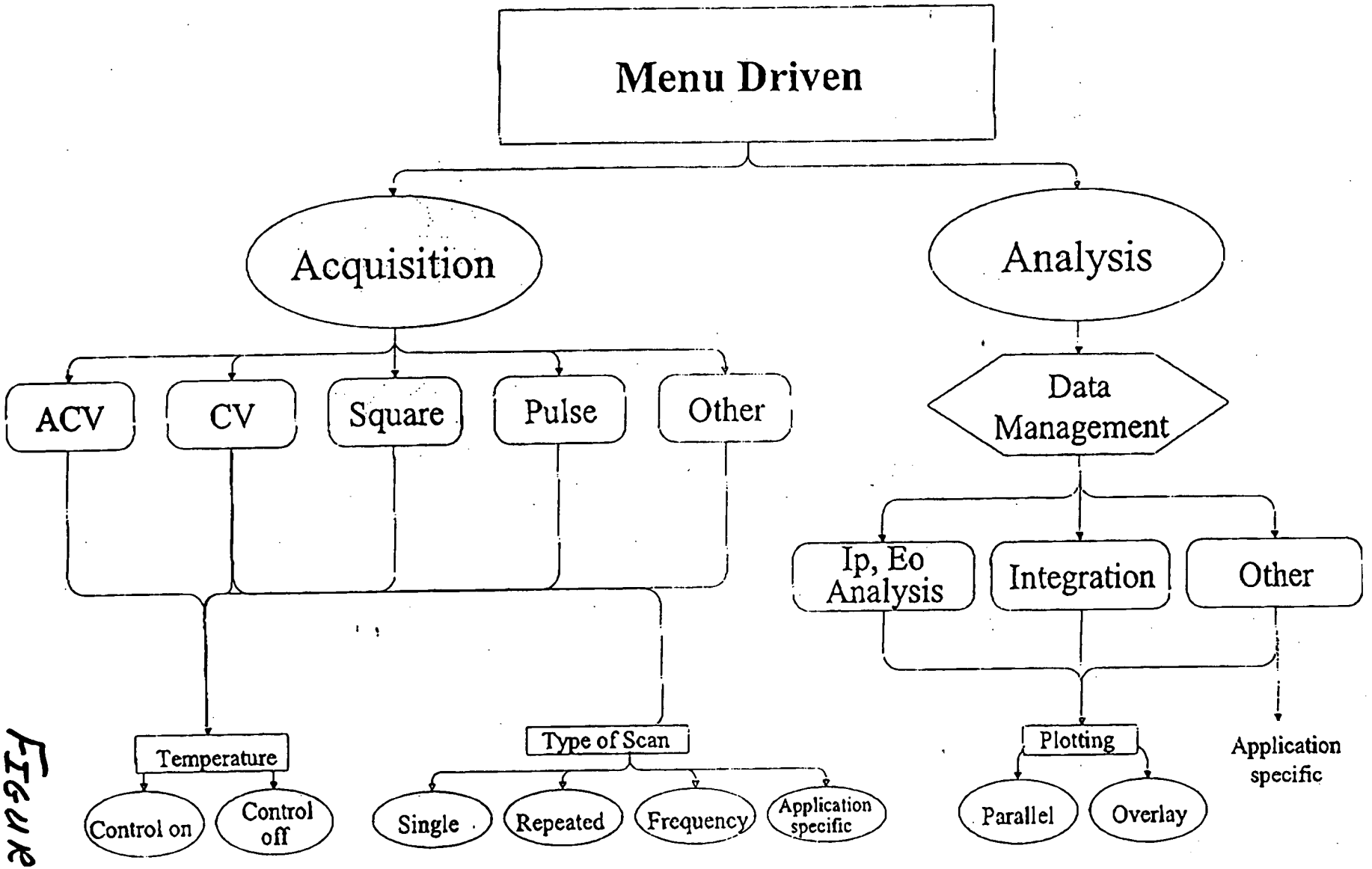


FIGURE 8

EDITED - 10/05/2000

FIGURE 9

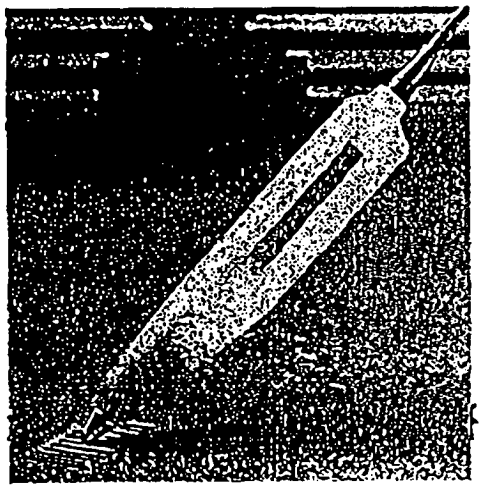
EDITED: 1/30/2020

FIGURE 10

EPITEC" 08209260

- Bar coded "reference" sheet, stored in tray under unit, with bar coded protocols, bar coded well and slot id's, bar coded commands (e.g. "cancel", "done", etc.)
- Standard bar code wand (preferably with built-in decoder), housed in the tray (hence hidden when not in use)
- Serial (RS-232/485) interface (preferred), or "keyboard wedge"
- Multi-code support (Code 39, Code 128, etc.)
- Bar code on chip carrier (1 code per "8 pack"), identifying test, batch, etc.
  - Peel off labels, with same code as on carrier, with each "8 pack"

Figure 11



EDITED: 08260960

- Bar code usage scenario
  - User fills "8-pack" (all 8, or partially) from a 96 well plate, or from individual sample containers (PCR tubes, vaccutainers, etc.)
  - Pull out tray (with bar code reference sheet) and grab wand
  - Scan "start" code
  - Scan protocol code from sheet (will remain in effect until "done" is scanned)
  - Scan chip code from carrier (will remain in effect until "done" is scanned)
  - For each cartridge, user will
    - ☐ insert the cartridge in an open slot. Unit senses new chip automatically
    - ☐ scan the sample ID by either
      - scanning 96 well plate bar code from plate and well code from sheet
      - or scanning unique sample ID from container
      - or scanning "no ID" from reference sheet
  - Scan "done" code. The protocol can now be started on these cartridges

FIGURE 12

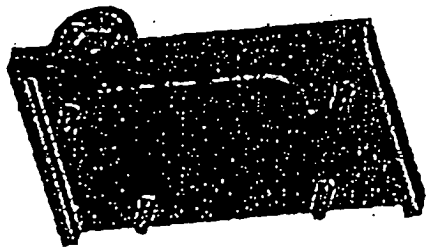
10110"b8C09260

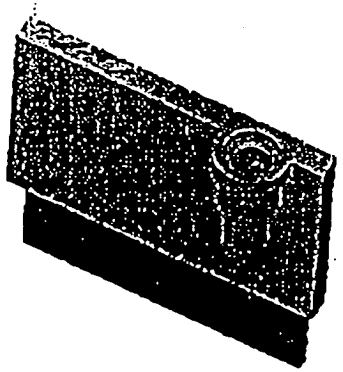
- Bar code concept benefits
  - No keyboard entry (all routine setup can be entered via bar coding)
  - All routine entries accomplished while in front of unit (no going back & forth between PC & Hydra)
  - All bar code entries done from small, flat surface in front of unit
  - No need to label each chip or each slot (which would compromise appearance)
  - Uses small unobtrusive bar code wand, hidden when not in use
  - Is flexible with respect to sample container (tube, 96 well plate, etc.), chip usage (by row of 8, or by individual chip), and lab bar coding method

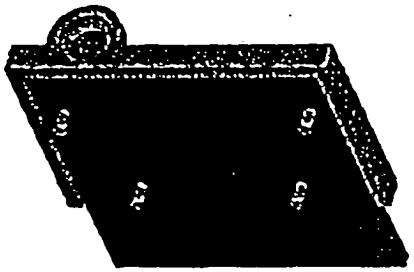
FIGURE 13

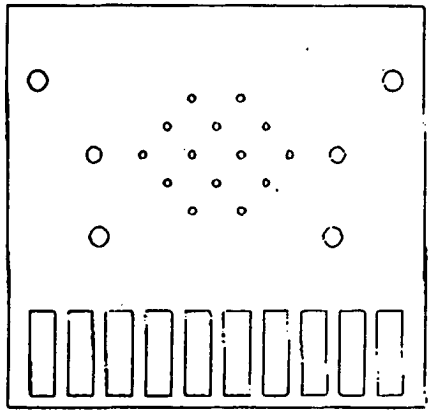
TOTTED "h8E09260

- "Oil can" concept (pressure feed, small sample volume)









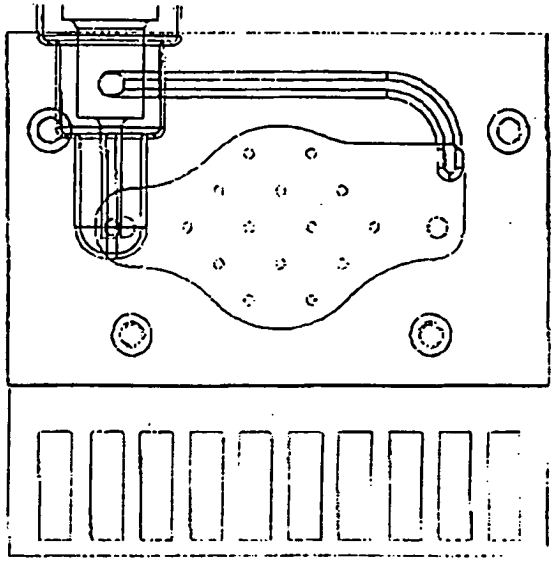
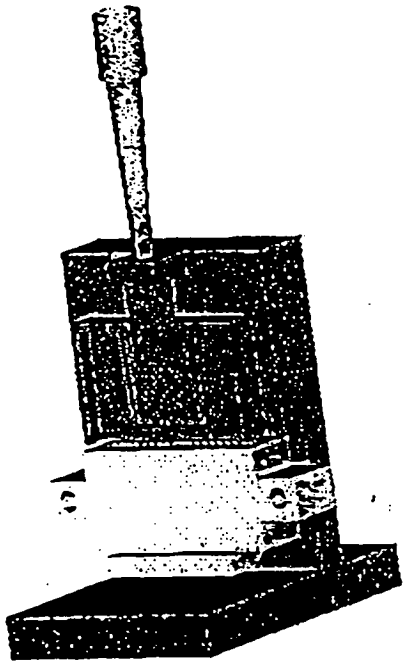
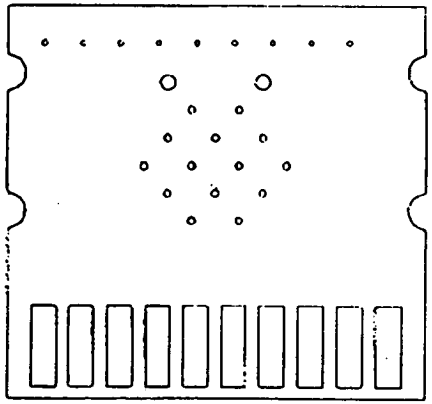


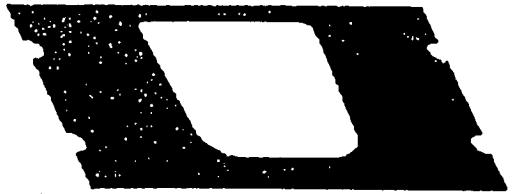
FIGURE 14

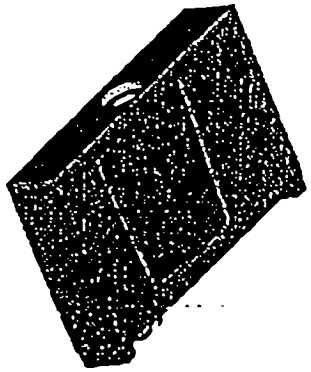
TOTTO" 08209260

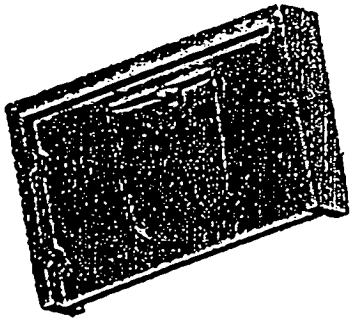
- PCR tube concept (gravity feed, large sample volume)











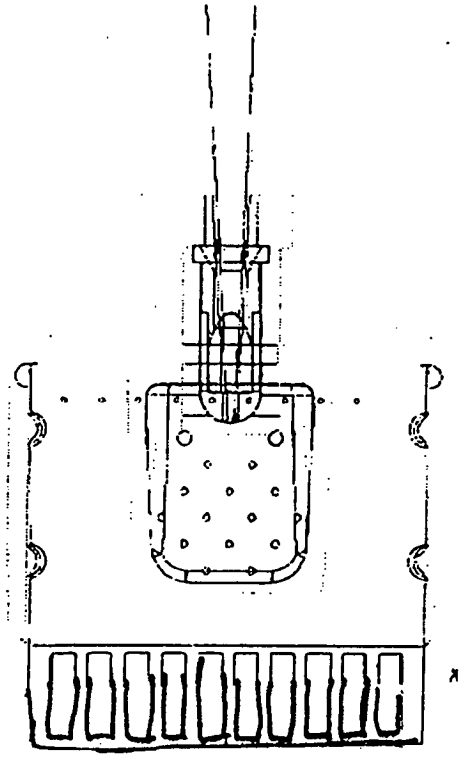


FIGURE 15

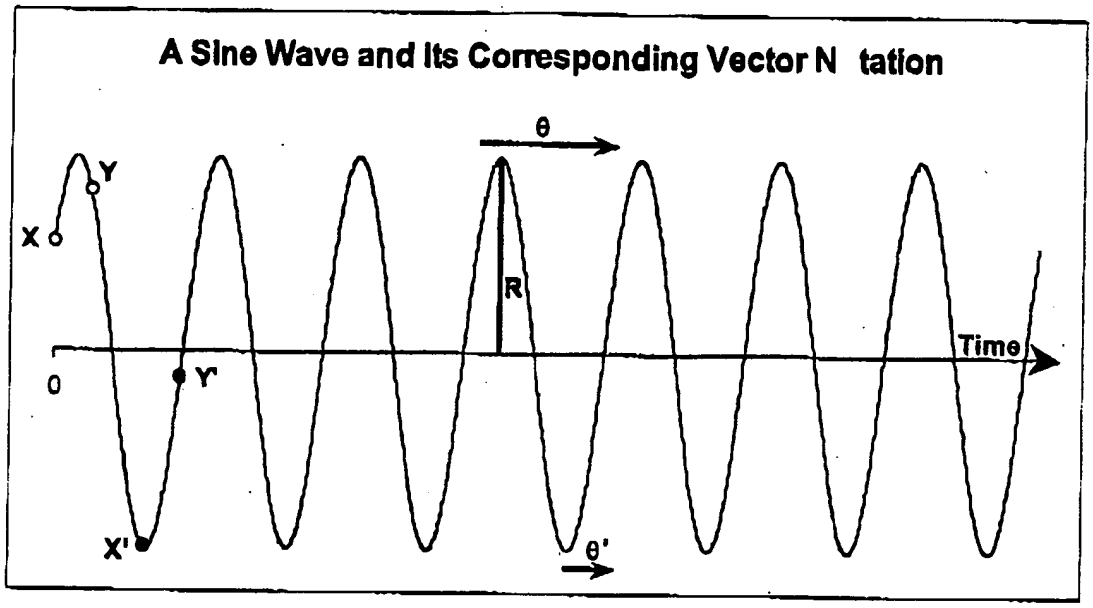


Fig 16

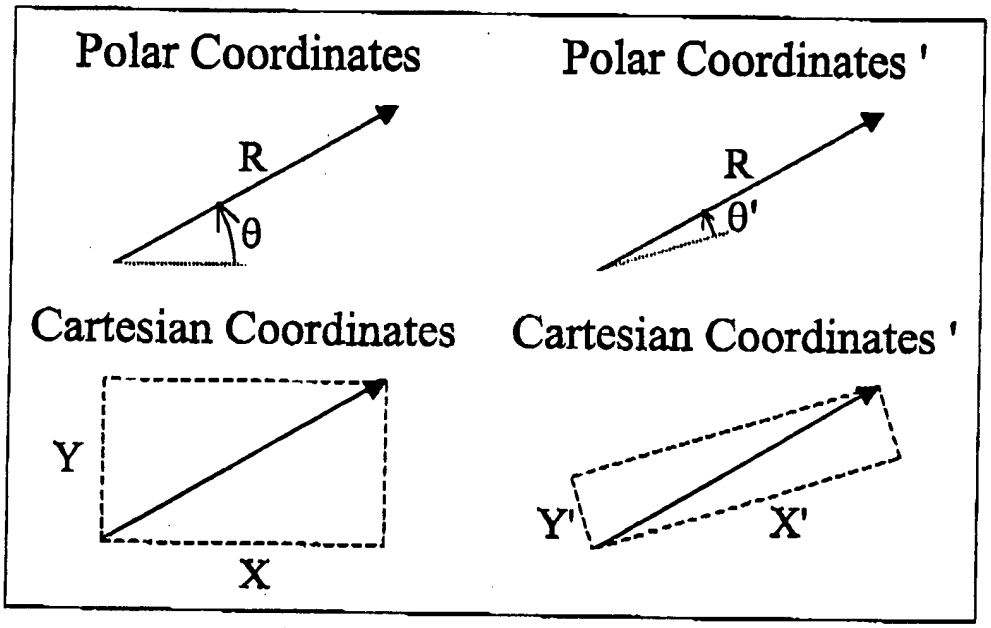


Fig 17

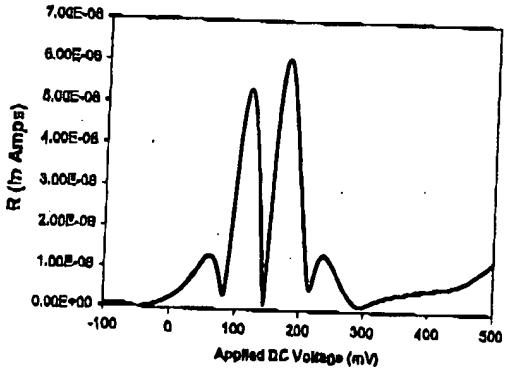


Fig 18

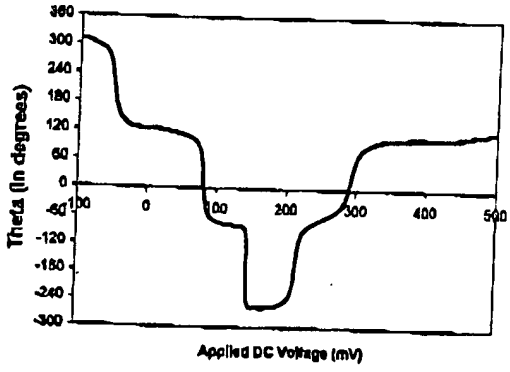
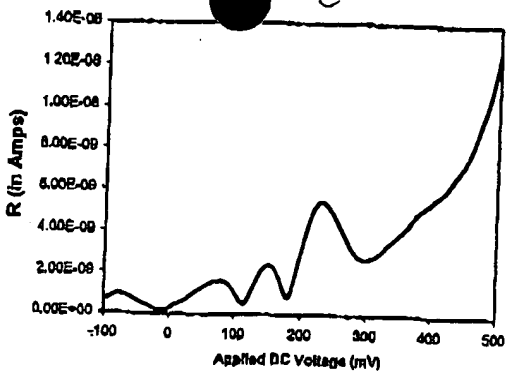


Fig 19

Fig 20



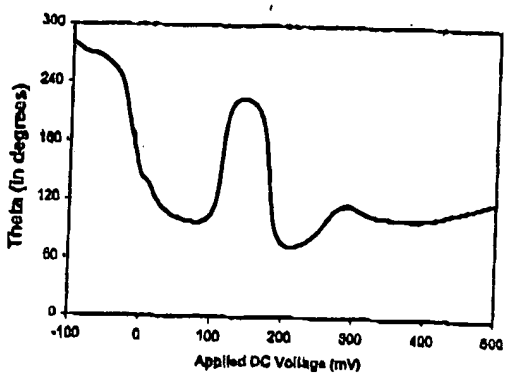
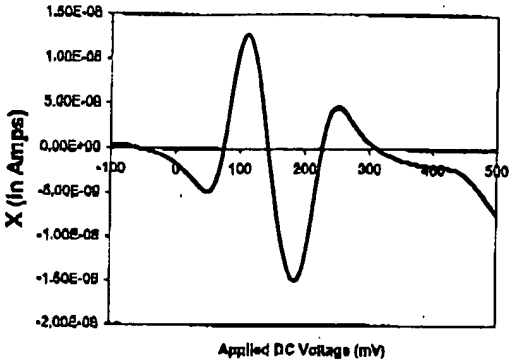
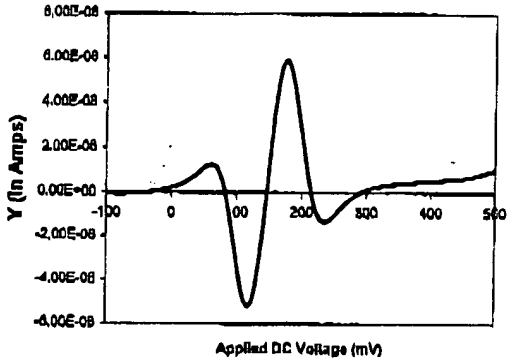


Fig 21

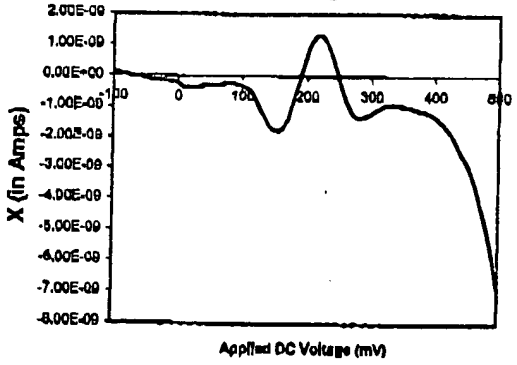
22

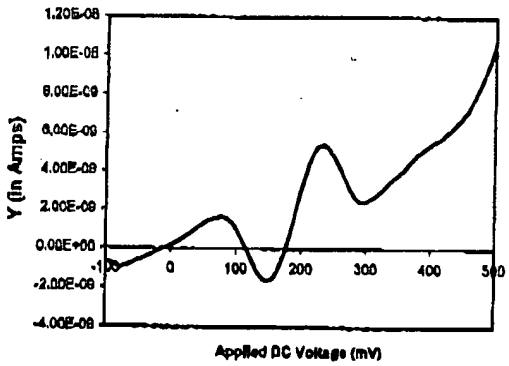




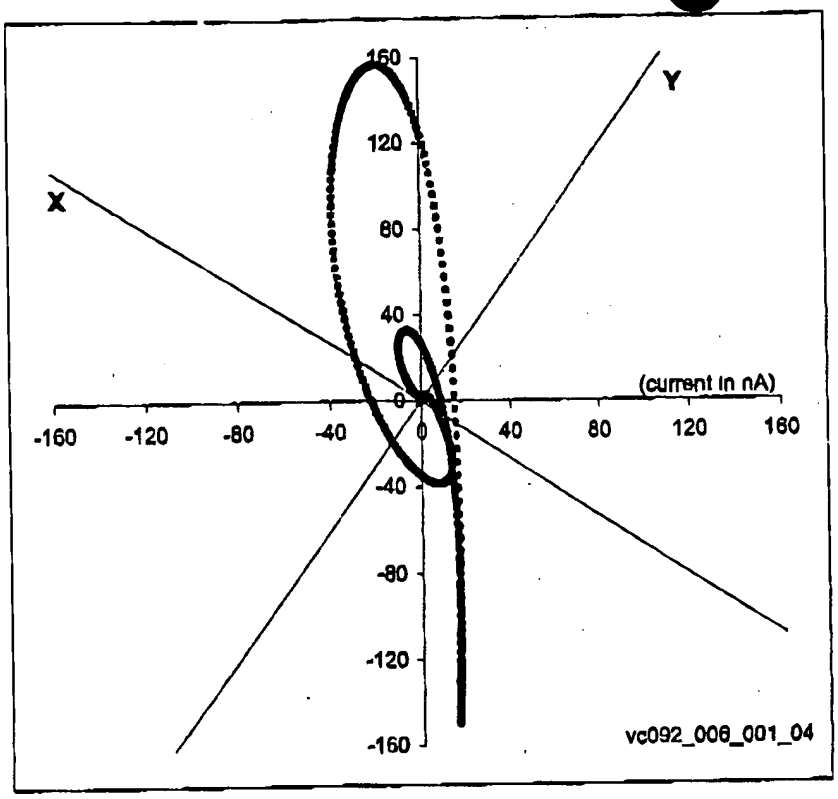
23

24

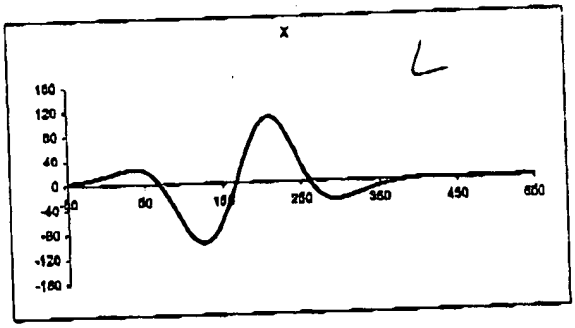


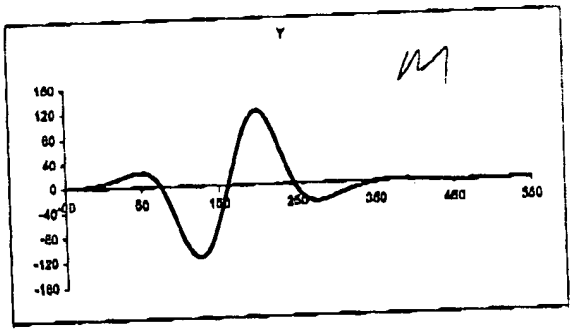


25


X
Y
(current in nA)
160
120
80
40
0
-40
-80
-120
-160
-160 -120 -80 -40 0 40 80 120 160
vc092_008_001_04

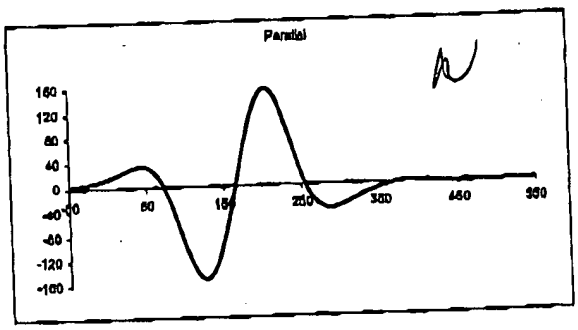
26

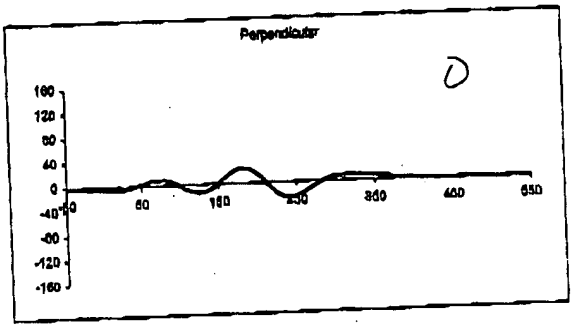

X
L


Y
M

27

28

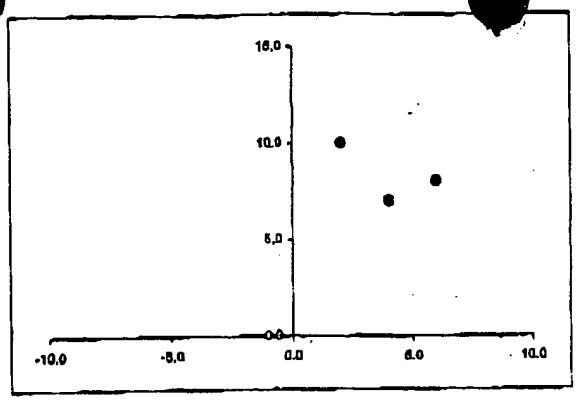

Parallel
N


Perpendicular
O

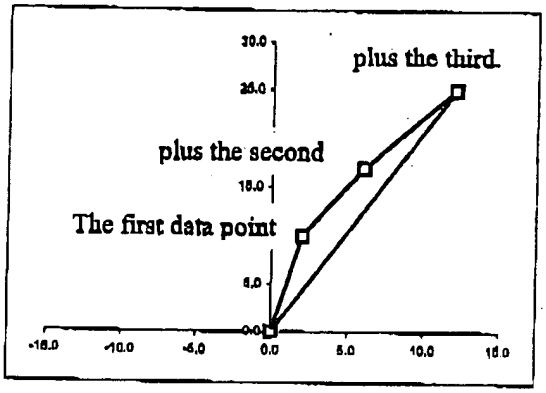
29

30

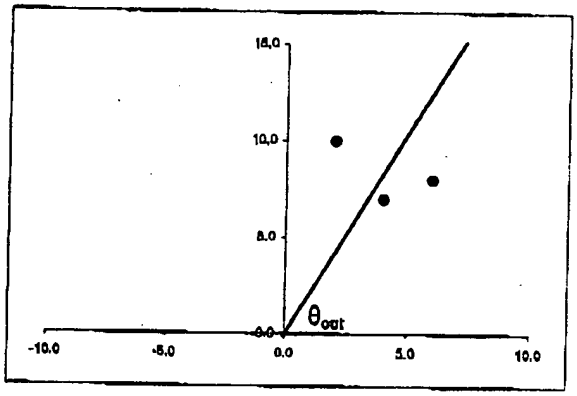
31



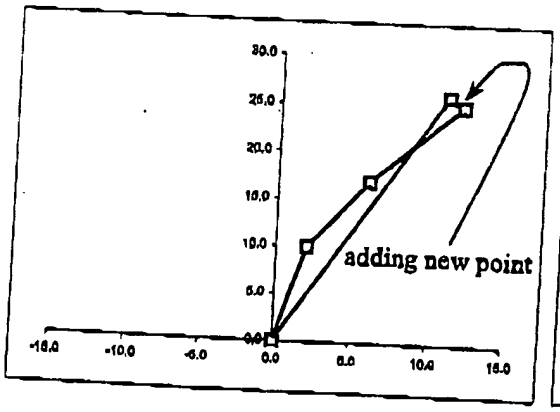
32



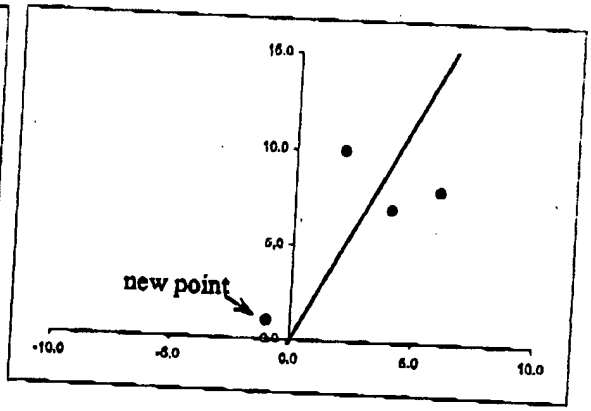
33



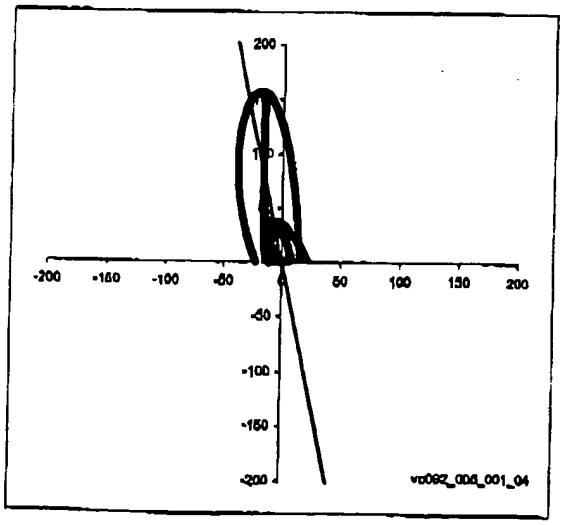
34



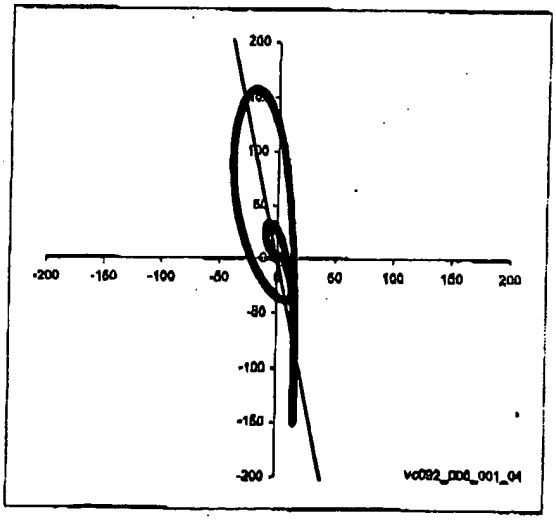
35



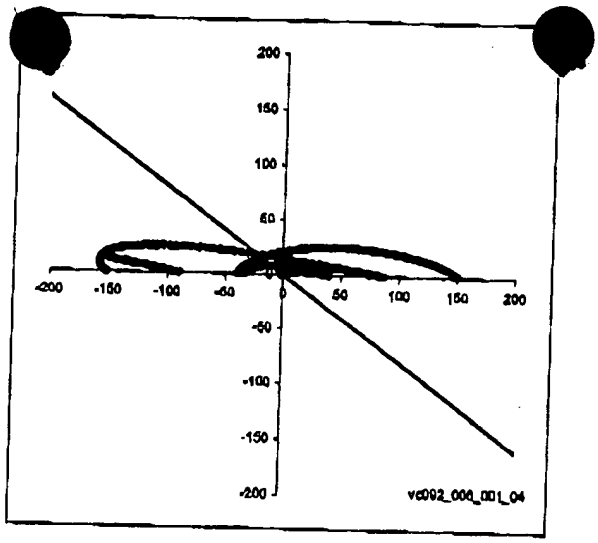
36



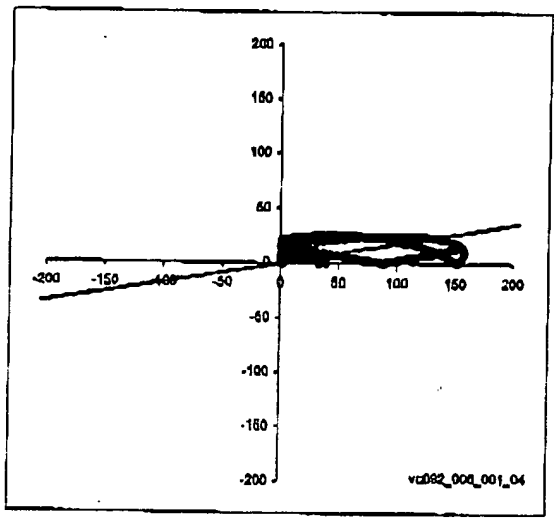
37



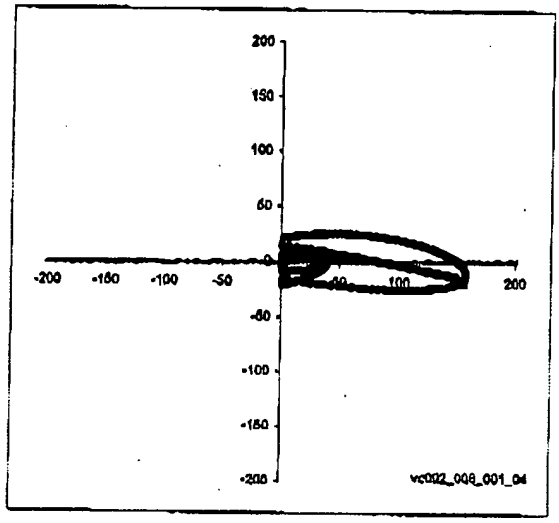
38


200
150
100
50
-50
-100
-150
-200
-200 -150 -100 -50 0 50 100 150 200
vc092_006_001_04

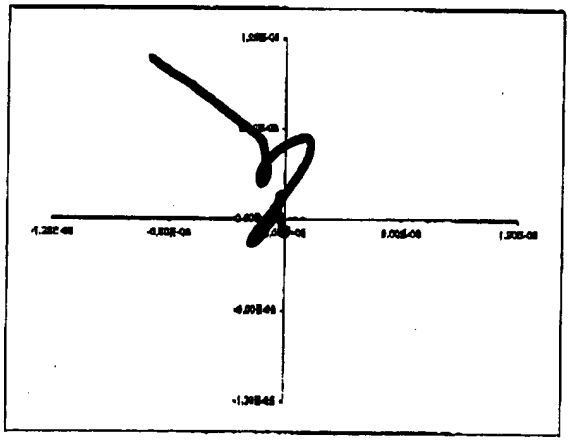
39


200
150
100
50
-50
-100
-150
-200
-200 -150 -100 -50 0 50 100 150 200
vc092_006_001_04

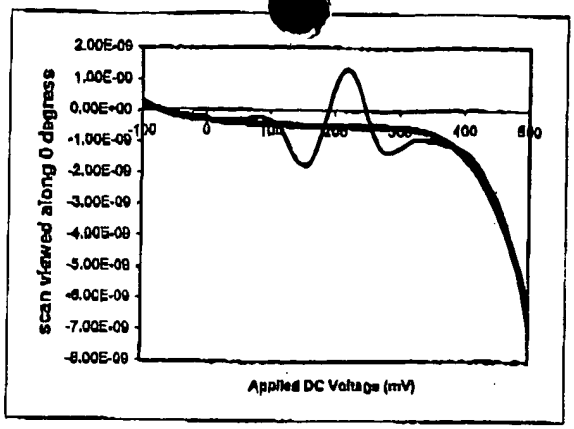
40


200
150
100
50
-50
-100
-150
-200
-200 -150 -100 -50 0 100 200
vc092_006_001_04

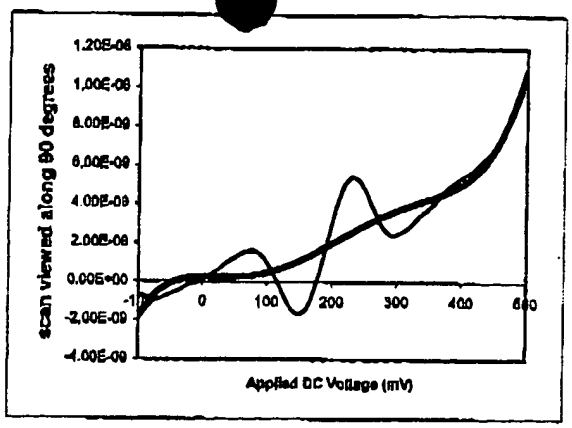
41



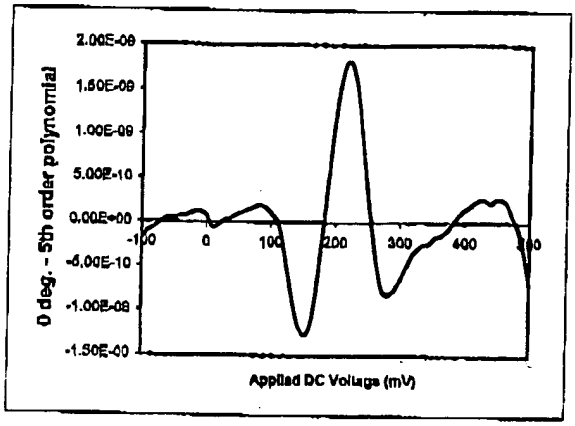
42



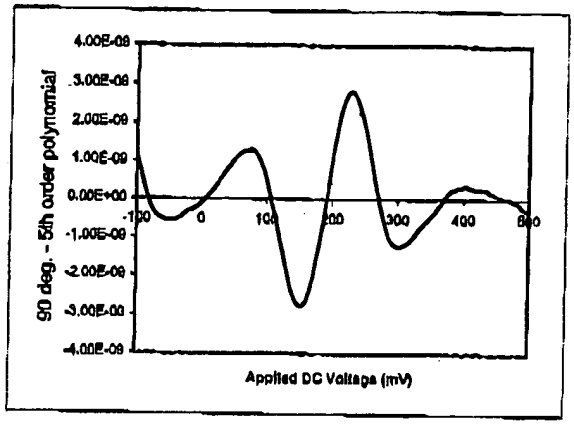
43



44



45



46

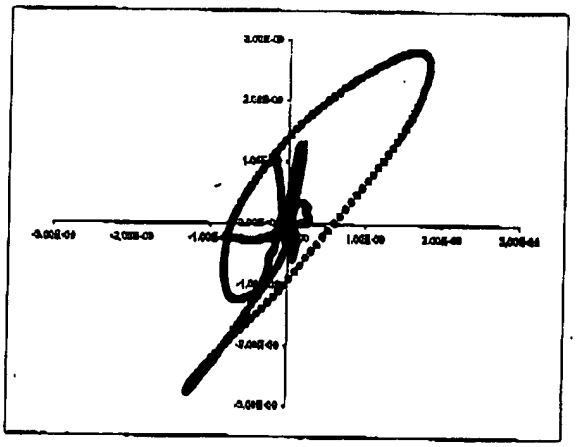
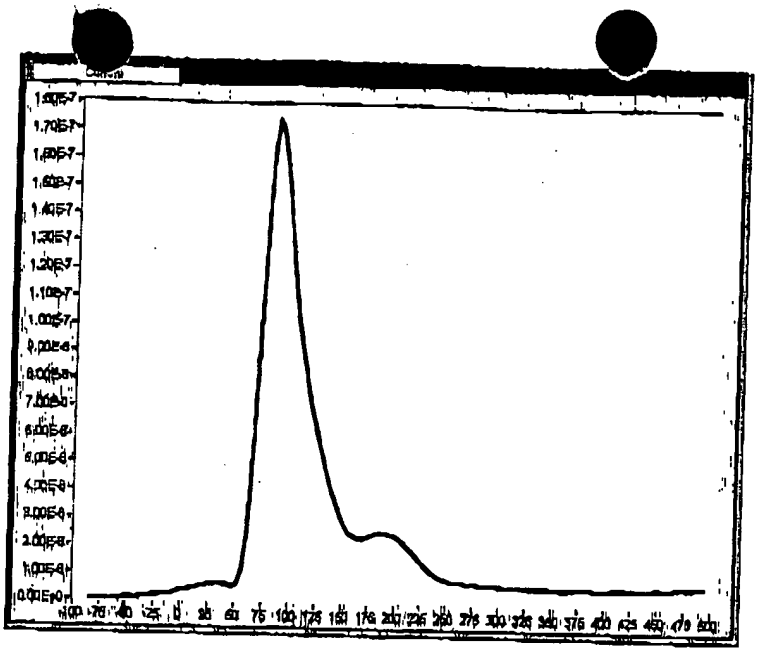
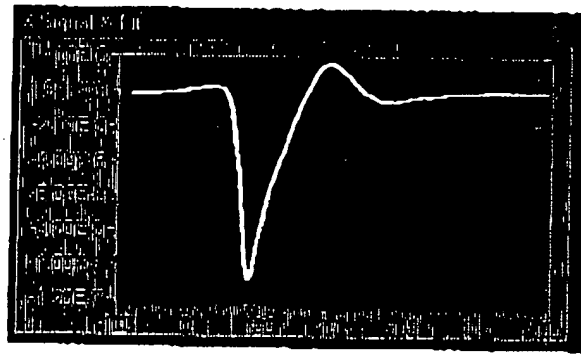


EXHIBIT 10 - 18 of 50

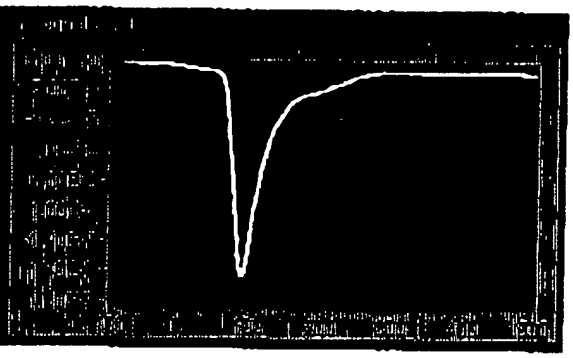
47



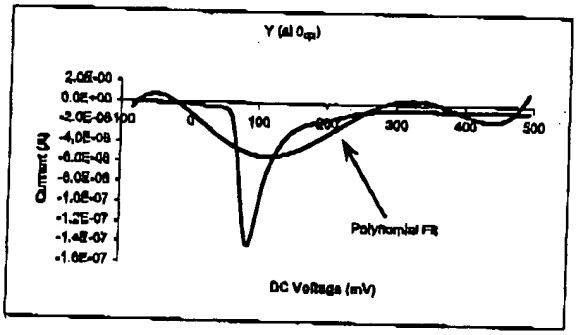
48



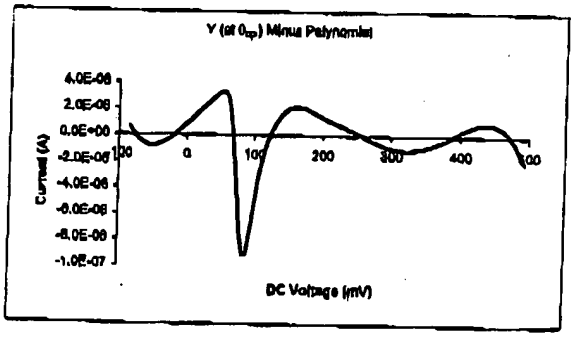
49



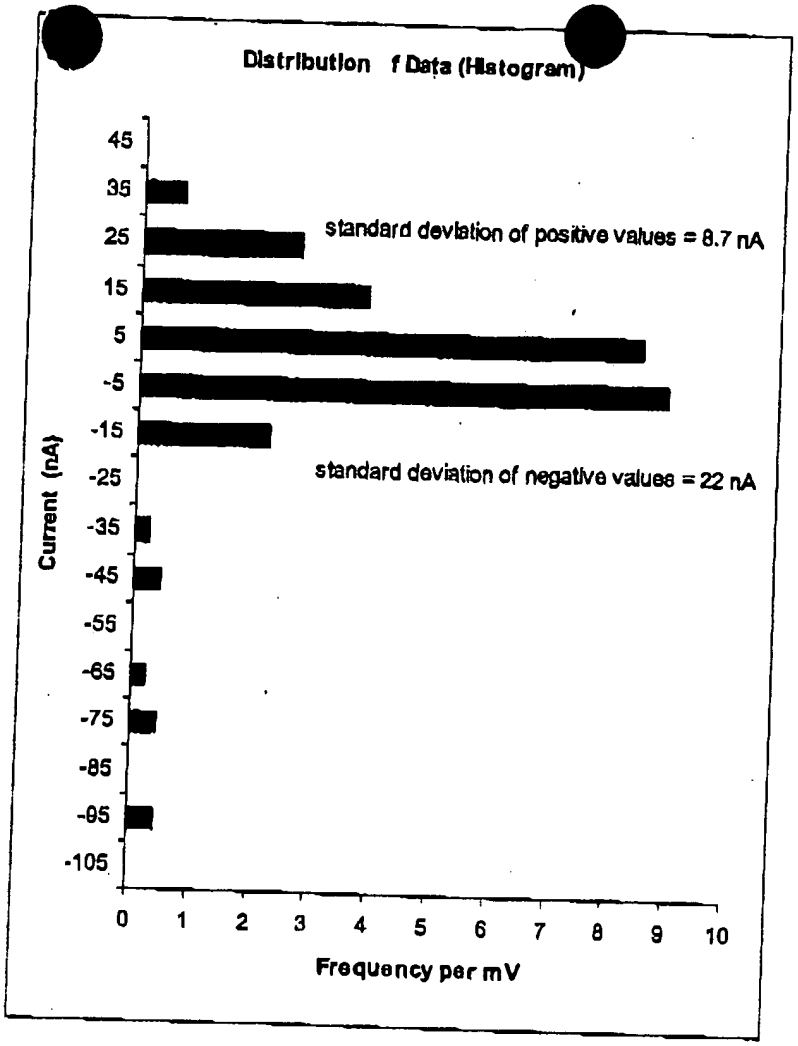
50



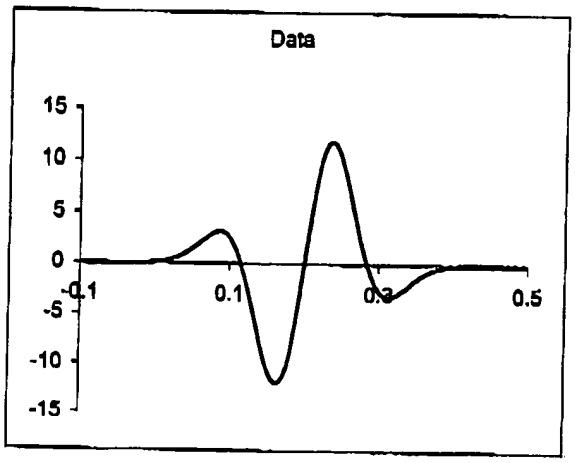
51



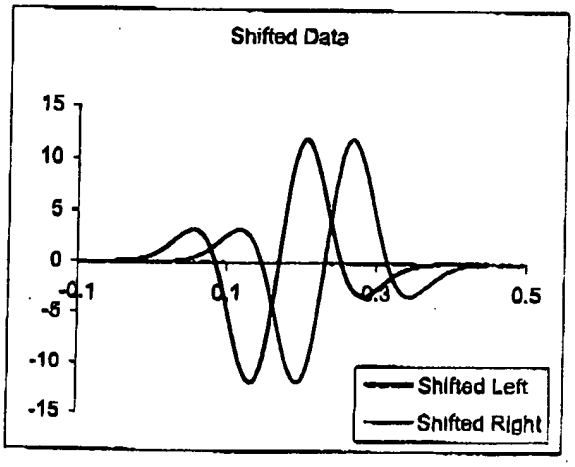
EDITED


Distribution f Data (Histogram)
standard deviation of positive values = 8.7 nA
standard deviation of negative values = 22 nA
Current (nA)
45
35
25
15
5
-5
-15
-25
-35
-45
-55
-65
-75
-85
-95
-105
0
1
2
3
4
5
6
7
8
9
10
Frequency per mV

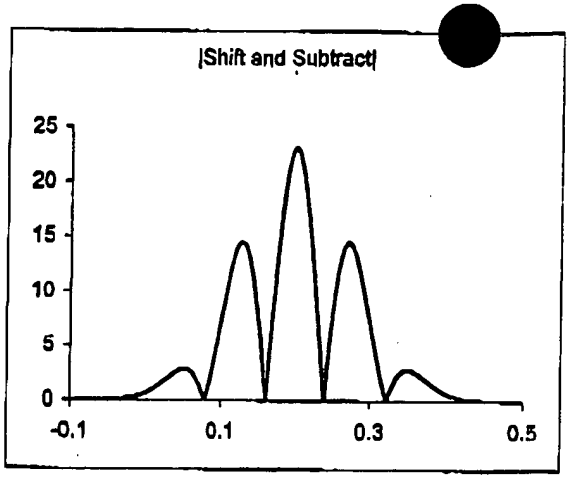
52


Data
15
10
5
0
-5
-10
-15
-0.1
0.1
0.3
0.5

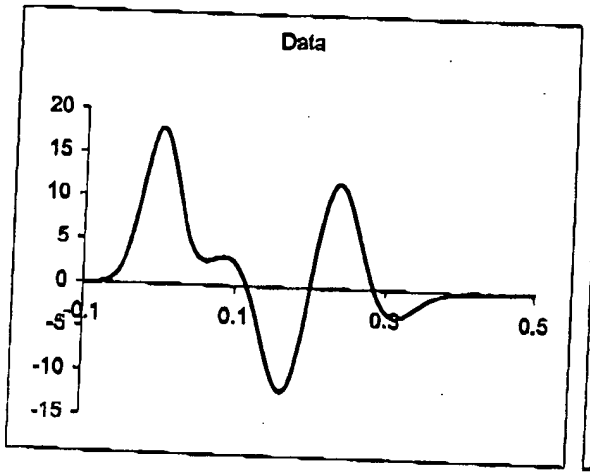
53


Shifted Data
15
10
5
0
-5
-10
-15
-0.1
0.1
0.3
0.5
Shifted Left
Shifted Right

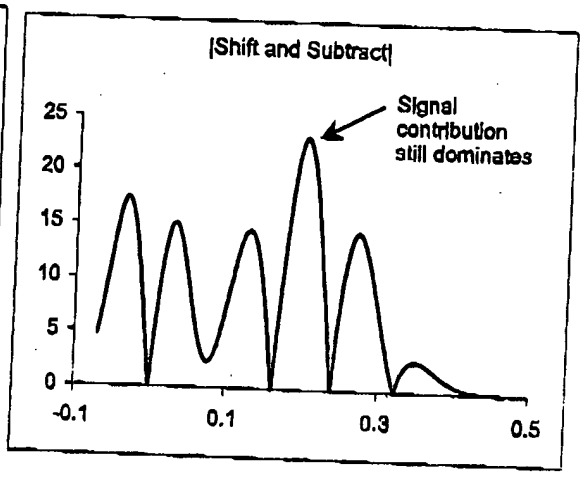
54


|Shift and Subtract|
25
20
15
10
5
0
-0.1
0.1
0.3
0.5

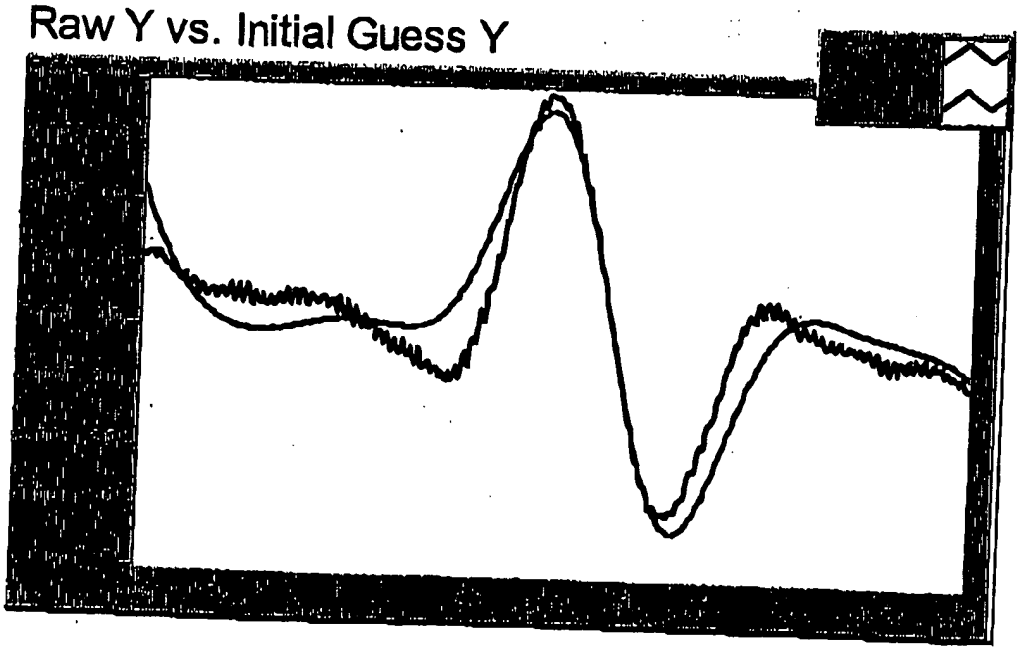
55


Data
20
15
10
5
0
-5
-10
-15
-0.1
0.1
0.3
0.5

56

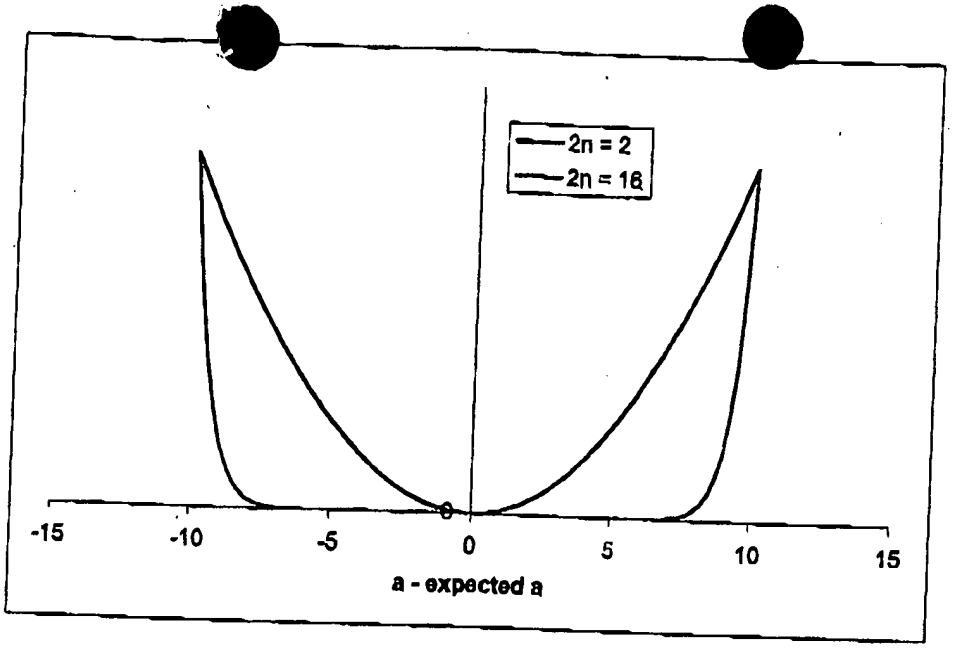

|Shift and Subtract|
Signal contribution still dominates
25
20
15
10
5
0
-0.1
0.1
0.3
0.5

57

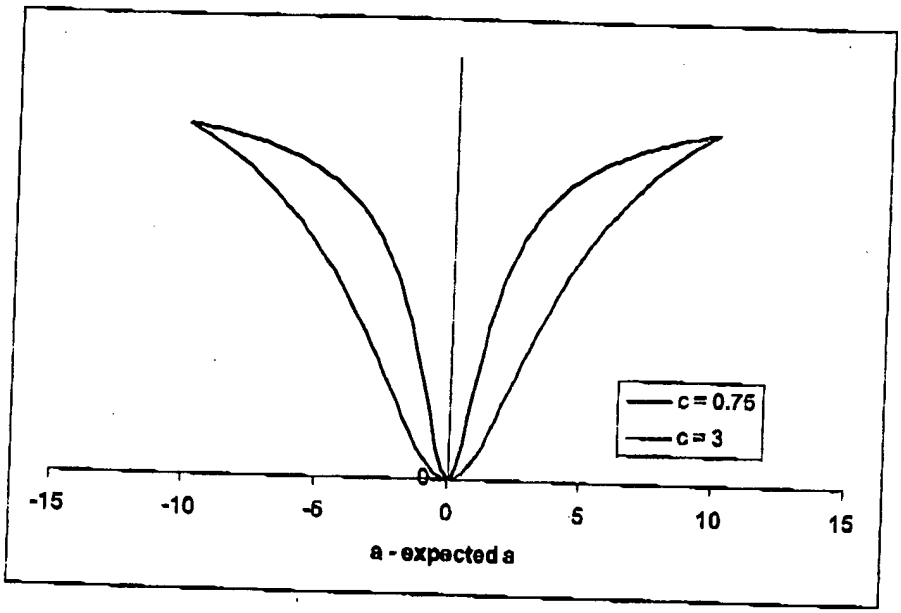

Raw Y vs. Initial Guess Y

58

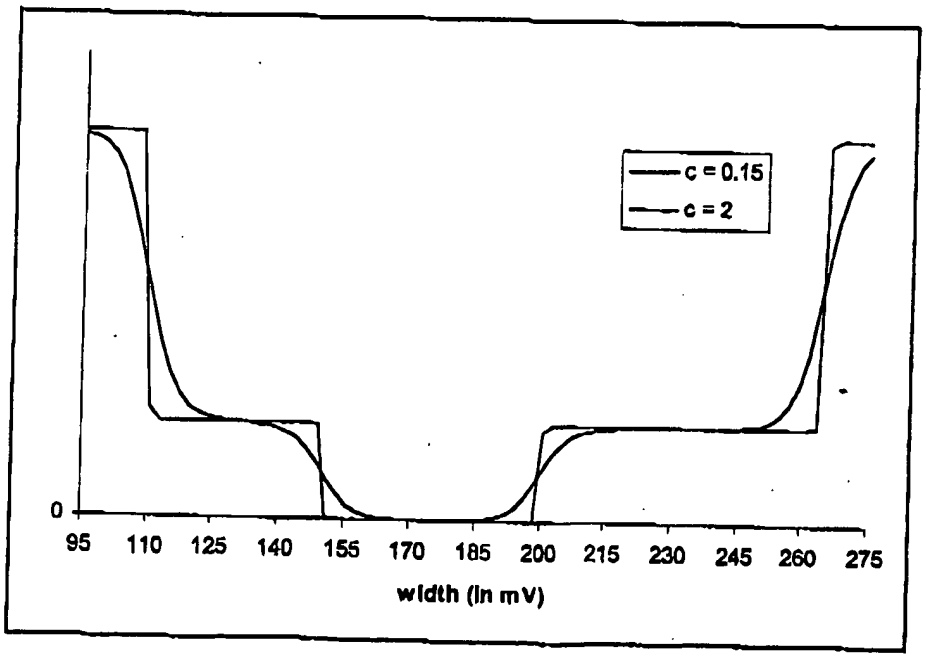
TOLEDO 1885 3260



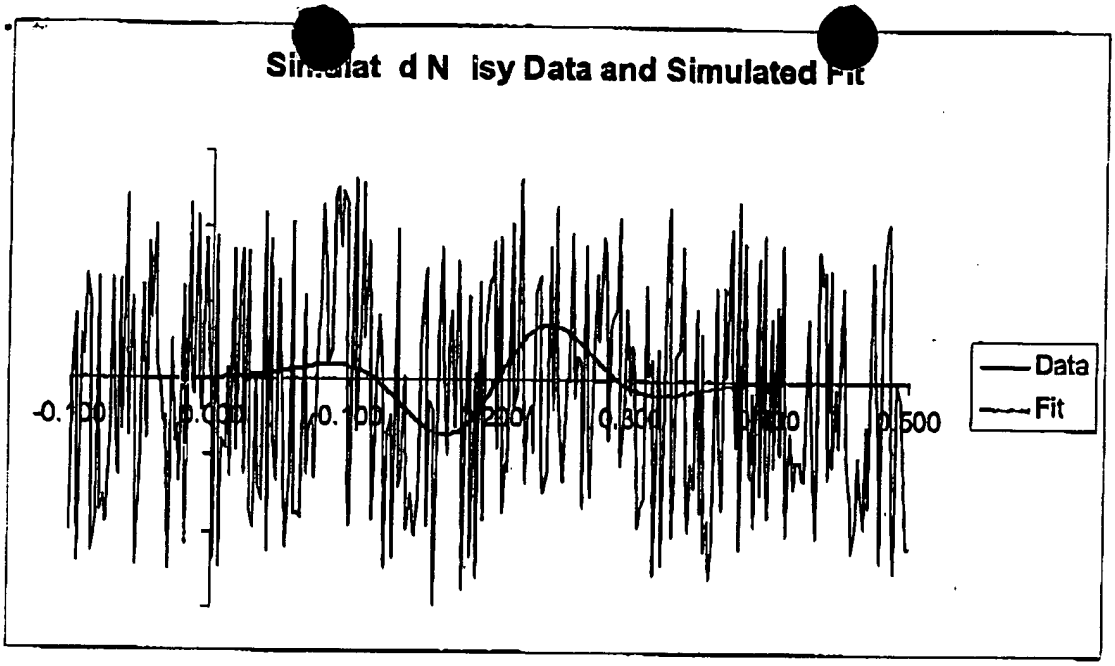
59



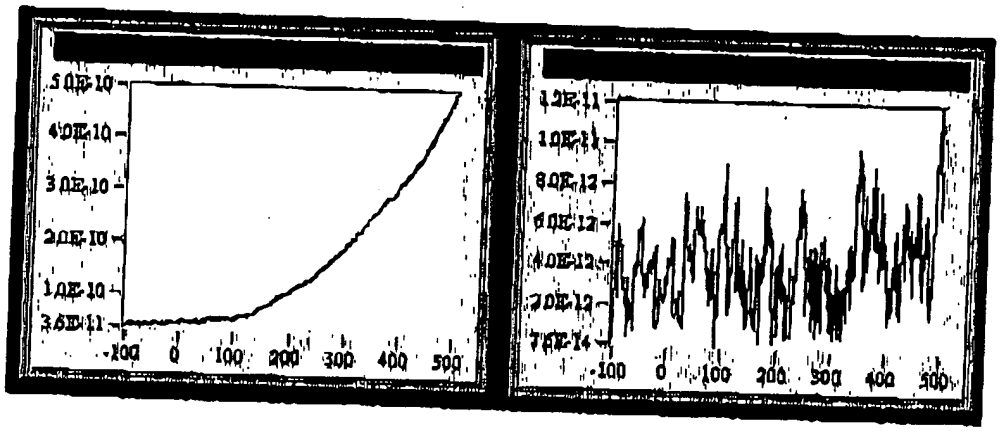
60



61

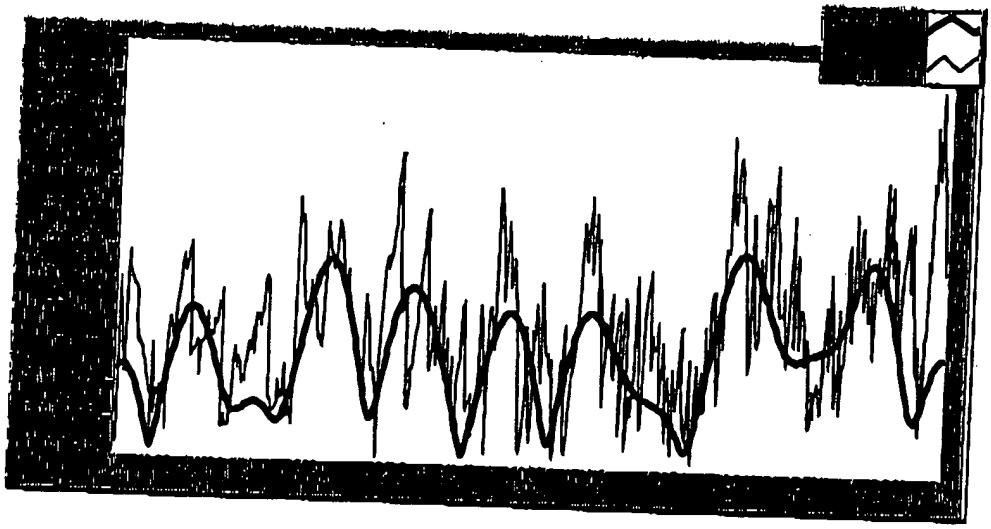


62



63

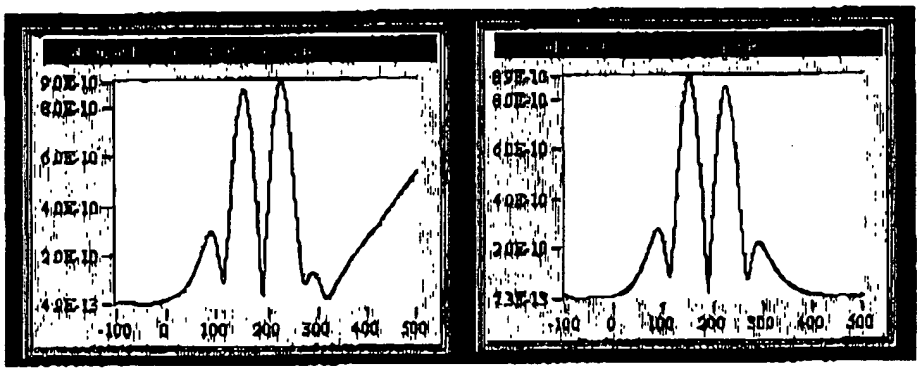
64



65

EDITED IMAGE

66



67

EDEN-00233600